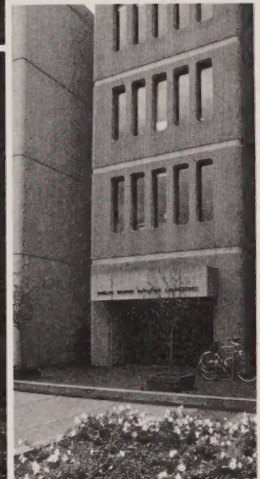
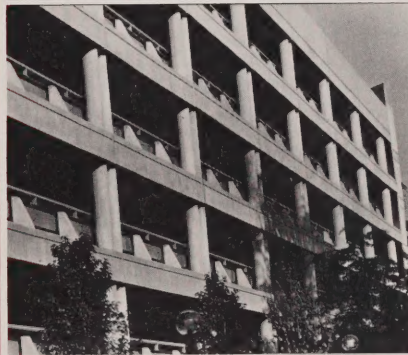
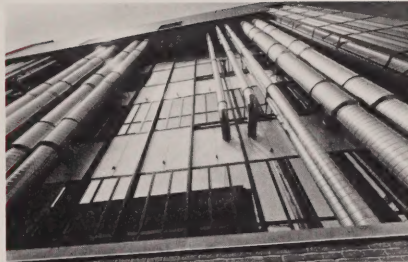


NEW ENGLAND
DEACONESS
HOSPITAL



ANNUAL
REPORT
1979



**The New England
Deaconess Hospital
A Harvard Medical School
Teaching Hospital**

affiliated with

Joslin Clinic
Lahey Clinic
Overholt Thoracic Clinic

fully accredited by

The Joint Commission on Accreditation
of Hospitals

Member of

American Hospital Association
New England Hospital Assembly
Massachusetts Hospital Association
Council of Boston Teaching Hospitals
American Protestant Hospital Association
Association of American Medical
Colleges, Council of Teaching Hospitals
International Union Against Cancer
Association of Cancer Institutes

Residency programs approved by

American Medical Association
Internal Medicine
Pathology
Podiatry
Radiology
Surgery
Thoracic Surgery

School of Nursing

fully accredited by

National League for Nursing
Massachusetts Board of Registration
in Nursing

School of X-ray Technologists

approved by

American Medical Association

School of Medical Technology

approved by

American Society of Clinical Pathologists

Blood Bank Training Center

approved by

American Association of Blood Banks

School of Cytratechnology

accredited by

American Medical Association

School of Radiologic Technology

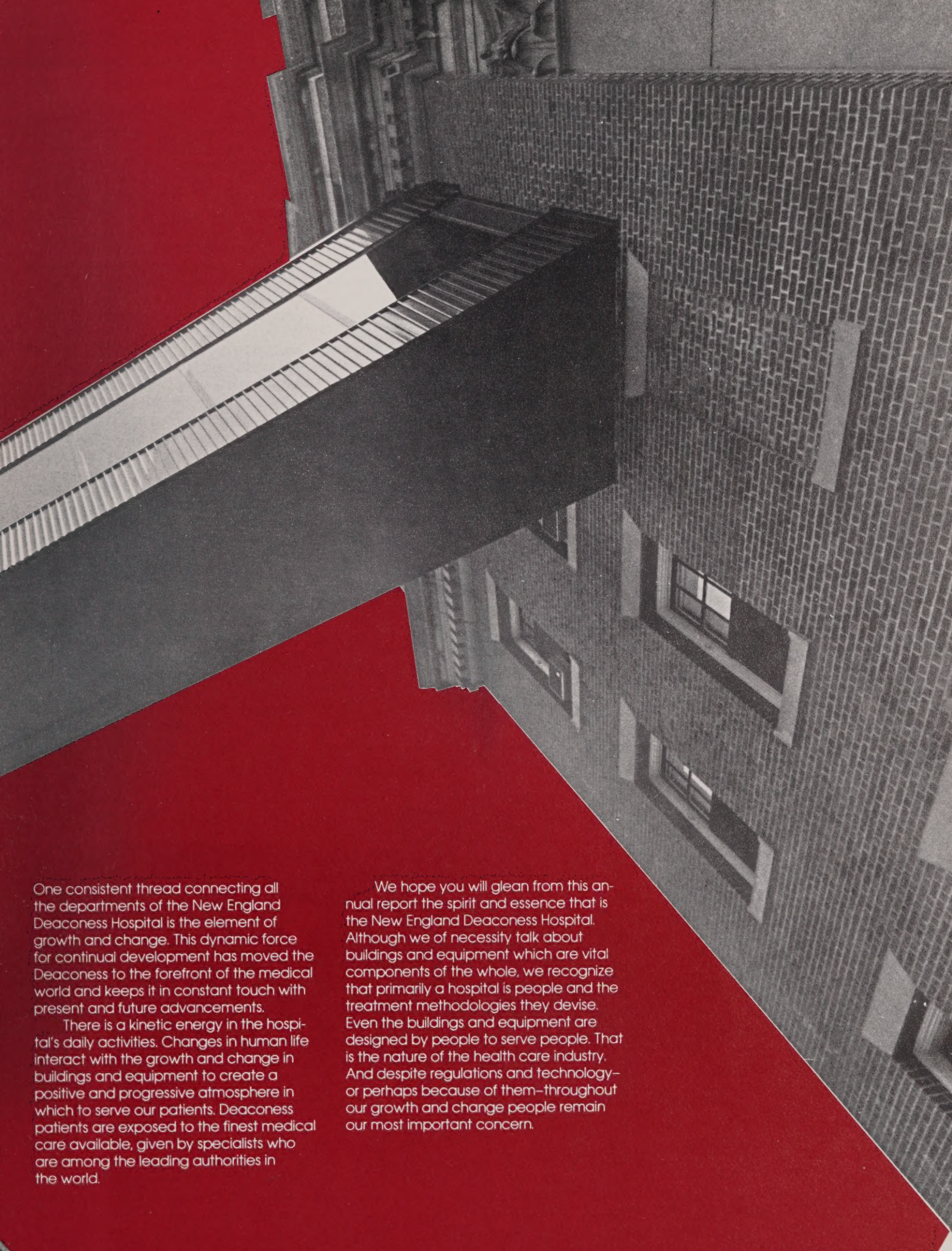
affiliated with

Northern Essex Community College

School of Nuclear Technology

affiliated with

Bunker Hill Community College



One consistent thread connecting all the departments of the New England Deaconess Hospital is the element of growth and change. This dynamic force for continual development has moved the Deaconess to the forefront of the medical world and keeps it in constant touch with present and future advancements.

There is a kinetic energy in the hospital's daily activities. Changes in human life interact with the growth and change in buildings and equipment to create a positive and progressive atmosphere in which to serve our patients. Deaconess patients are exposed to the finest medical care available, given by specialists who are among the leading authorities in the world.

We hope you will glean from this annual report the spirit and essence that is the New England Deaconess Hospital. Although we of necessity talk about buildings and equipment which are vital components of the whole, we recognize that primarily a hospital is people and the treatment methodologies they devise. Even the buildings and equipment are designed by people to serve people. That is the nature of the health care industry. And despite regulations and technology—or perhaps because of them—throughout our growth and change people remain our most important concern.



MANAGEMENT'S REPORT

The past year has been another very active year in the long life of our hospital. At the well attended monthly meetings of the Trustees the important management and financial matters are reviewed by the whole Board; and at every meeting, the President of the Medical Administrative Board reports. Also, one of the Chiefs of Clinical Services reviews activities in his

department, and of course the Board receives reports from various of its standing committees.

We are proud and appreciative of the vast number of voluntary hours given the hospital by our Trustees and committee members.

The Deaconess traditionally has enjoyed a high occupancy and 1979 was no exception. This situation puts a continuing heavy strain on our staff and facilities. Our operating suites, recovery room, and intensive care units are at capacity. We continue to have a sizable waiting list comprising patients urgently requiring hospitalization. As a result, we have added an extra half shift in Surgery to better utilize the operating rooms; we are relocating our Cardiac Catheterization Laboratory; we are reactivating two additional suites for surgery; and we have added personnel to our recovery room staff. The continuing pressure for beds, coupled with an active Utilization Review Committee, is the best insurance we could have that our hospital is operating at a very high level of utilization.

Reflecting a new occupancy record of 94.1%, net operating revenues reached \$61,905,000. Expenses amounted to

\$61,883,000. After non-operating income, we ended the year with a surplus of \$1,385,000. While we are pleased with these results, it should be pointed out that an operating surplus in today's inflationary environment is an absolute necessity in order for us to maintain adequate working capital.

We must redouble our efforts to raise new funds for capital needs. As a specialty referral hospital, the Deaconess must continue to offer the very latest technology for diagnosis and treatment. We are increasingly dependent on outside support to assist us in our effort to maintain our prominence as a referral hospital. In this context we are pleased to report that our fund raising activities resulted in gifts to the hospital amounting to just over \$500,000 during fiscal 1979. These funds will be used to defray the cost of renovations and new equipment.

During the year we completed two building projects and started another. In December the addition to our Pilgrim Road parking garage was opened, providing 345 additional spaces for employees, patients, and visitors. This much needed project was brought in on schedule and on budget. In the spring we opened the bridge across Pilgrim Road connecting the Farr Building and Harris Hall. This link enabled us to relocate the house staff's overnight quarters and a classroom, paving the way for the new Cardiac Catheterization Laboratory mentioned earlier and to move our hemodialysis unit into



larger quarters. Finally, we broke ground in April for an 8000 sq. ft. addition to the Cancer Research Institute which will cost \$760,000 and is scheduled for completion during the first quarters of 1980.

We regret to report the retirement of Dr. Bradley E. Copeland as Chairman of the Department of Pathology after 29 years of service. We also regret that Dr. James L. Tullis and Dr. Cornelius E. Sedgwick contemplate retirement as Chiefs—but not as active members of the staff—of the Departments of Medicine and Surgery respectively.

Search Committees have been actively seeking successors to these clinical chairmen. On the recommendation of the Pathology Search Committee, Dr. Merle A. Legg was appointed Chairman to succeed Dr. Copeland. We hope to be able to announce that we have a new Chairman for the Department of Medicine in the near future. The Surgery Search Committee is hard at work.

Federal and state agencies continue to encroach upon the health care delivery system through increasing regulation. This reflects the fact that health costs are being financed more and more by government funds, as well as the fact that medical and hospital costs, until last year, were rising at a higher rate than other service segments of the national economy. Because of threatened federal

controls, last year the hospital industry undertook a nationwide "Voluntary Effort" designed to reduce the rate of increase in hospital costs from approximately 15% to 13%. This program was successful in bringing the rate of increase below 13% during 1978 and has targeted a goal of 11.6% for 1979. As a part of our effort to restrain costs, we established a Cost Containment Committee last year which was able to lower our energy expenses by \$610,000, and was very successful in raising our awareness throughout the hospital of the necessity to hold down costs.

The hospital industry is already a highly regulated industry. In fact, both charges and expenses must be reviewed and approved by the State Rate Setting Commission. Moreover, we cannot make any major additions to our plant, our equipment, or our services without prior regulatory approval. Clearly, we are regarded as a public utility and treated accordingly. Given this environment, it is very pleasing to report that the Deaconess was successful last June in obtain-

ing a Determination of Need to acquire a full body scanner. We were one of only six successful applicants. Our success here will enable us to continue in the forefront of new technology in health care. Moreover, it should enhance our position as a referral hospital.

The growing pressures of regulation are placing a greater premium on effective planning as well as joint planning with other health care organizations. No longer can a hospital "do its own thing," without taking into account how its activities will impact the system. In this context the Deaconess, Joslin Clinic and Brookline Hospital teamed up to open a ten-bed unit at Brookline for diabetic patients. Also, the Deaconess Oncology Service has developed relationships with three outlying hospitals whereby we will provide backup services to them for their patients with cancer. Such mutually beneficial arrangements are encouraged by the regulators; they benefit everyone involved and help hold down costs.

During the next two years, our biggest challenge will be to plan for the transition necessary to accommodate to the Lahey Clinic's opening of its own 200-bed hospi-



4 tal in Burlington in January of 1981. We expect this will lessen the need for beds at the Deaconess on the part of the Clinic, and for the first time in many years allow the Deaconess to recruit new doctors for our staff. It also should permit the development of new referral and affiliation arrangements, such as those described above. Our ability to work out a successful transition will have a major impact on the future of our hospital.

During the year, four long time Trustees reached the maximum term of service under our bylaws and retired: F. Gorham Brigham, Lester C. Peabody, Humphrey H. Swift, and Kenneth W. Warren, M.D. Collectively they have served the hospital for 88 years. We will miss their active participation in Board deliberations, as well as their valuable judgment.

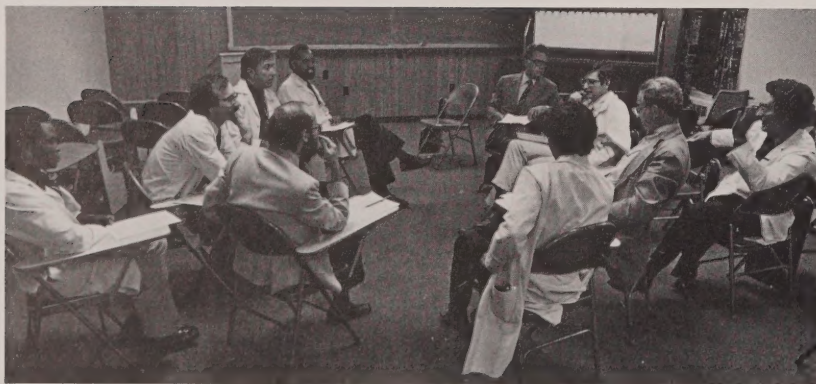
Managing a large hospital today is very demanding and cannot be done successfully without a dedicated staff. We wish to express our appreciation to our Trustees, our Committee Members, the Friends, the members of our Medical Staff, and to all of our employees for their support during the past year.

James F. Farr, Chairman
Laurens MacLure, President

DEPARTMENT OF MEDICINE

The theme of this year's hospital report, Growth and Change, is particularly apt to the Department of Medicine. A change in leadership will occur sometime in 1980. Alterations in the policies and programs of the Department inevitably will follow. This is right and proper. Institutions and their component parts all follow the normal biological rhythm of birth, growth, maturation, and renewal in order to maintain their relevance and vigor. A look at the growth of the Department since its formation 16 years ago may give insight into the pertinence of its present state as well as the possibilities for future change.

During 1963 a committee under the chairmanship of Dr. Lyman Hoyt rewrote the constitution and bylaws of the medi-



cal staff so as to permit the organization of traditional departments of Medicine and Surgery within the Deaconess. This was accepted by the Medical Administrative Board in June 1964, and permitted the amalgamation of the diverse hospital activities of the General Medical Staff, the Joslin Clinic, and the Lahey Department of Medicine into a single cohesive unit. The same month the Board of Trustees appointed the present Chairman to guide the Department through its formative years. It was also the year that Mr. Laurens

MacLure assumed Presidency of the Board of Trustees and Mr. R.D. Lowry, then the Executive Director of the Hospital, raised the minimum wage to \$1.15/hour. What has the pooled effort of all of the physicians in the Department been able to accomplish in the interim?

□ The three separate residencies of the General Staff, Joslin and Lahey Clinics have been consolidated into a single program covering all medical patients.

□ The number of medical residents has risen from 18 to 52.

□ The average number of medical patients supervised each day has risen from 140 to 310.

□ The common admission diagnoses of "medical check-up" and diagnostic study have changed to the most complex types of medical problems.

□ An emergent-Observation Unit has been opened primarily to provide educational opportunities for house staff and secondarily to offer a much needed triage and holding area for acute problems.

□ Continuing medical education has been mandated for the Senior Staff by State law and by Medical Society membership. This is now provided within the hospital.

□ A minor affiliation has been effected for the training of Harvard medical students and after a decade of experience is now being considered for advancement to a major status.

□ A coronary care unit has been established.

□ A post-coronary care unit has been established.

□ A renal dialysis unit has been established.

□ An electroencephalographic-electromyographic unit has been established.

□ A pulmonary function laboratory has been established.

□ A nucleus of full-time and part-time physicians has been created under the designation, Deaconess Medicine, to assist in education, staff recruitment, and the supervision of appropriate cost intensive hospital equipment in specialty areas.

□ Cluster areas have been planned for the intensive supervision and treatment of patients with oncologic, pulmonary, and neurologic disorders.

□ Twelve sections have been created within the Department each with its own chief to coordinate patient service and education: Cardiology, Pulmonary, Renal, Gastroenterology, Neurology, Hematology, Oncology, Endocrinology, Rheumatology, Allergy, Psychiatry, and broad-based Primary Internal Medicine.

□ Educational outreach has placed Deaconess staff into six hospitals throughout New Hampshire and Massachusetts in an ongoing basis and strengthened the Hospital's image as a tertiary, referral base.

□ Separate contracts have been established for the provision of regular professional services to outside institutions not possessing a full range of medical specialties, thus strengthening further the Hospital's patient flow.

□ A centralized billing and administrative service has been organized within the Department for those private physicians on the General Medical Staff who wish to make their professional services available on a regular basis to executives and other employees in industries in the greater Boston area.

What purpose has this activity served? If it has not advanced the quality of care rendered to our patients, at the same time as the quantity, its costs cannot be justified. If it likewise has not advanced the corporate image and goals of the Deaconess Hospital it has no role here. The answers to these questions hopefully are favorable but they must be asked repeatedly, over and over again. Each new outreach, each fresh program in addition to its potential benefits creates its own special problems. The net balance must be weighed annually, and anything that does not remain cost effective in both dollars and people must either be dropped or consolidated. It is inevitable that there will be less resources available as further increases in medical technology and regulatory control continue to exert impact on medical care.

The principal feature which has been missing from the departmental mix has been a strong program of medical research. As a clinical hospital, it was relevant for the Deaconess first to strengthen the scope and intensity of its patient care programs and the inter-related educational efforts which are essential in order to attract and retain a sophisticated staff. Now, our growth must be in the important field of medical research in order to round out the academic base of the Department and complement its present strengths. Without a constant search for new knowledge and new ways of using



6 old knowledge, we will fail to maintain the impetus which has been generated thus far. The hospital and its sustainers must provide for the next chairman the necessary space and resources to mount an effective investigative program. They provided its first chairman with a degree of freedom from regulatory or pragmatic constraint which was unique to a particular period of American medical history. They also provided him with the excitement of being present at the start of something new. This made it possible to face the future with confidence and so state in the first annual report:

"The task of the Department of Medicine is a formidable one. It must maintain the high quality which the attending staff has traditionally shown, in the face of the manifold socioeconomic factors which are tending to change the form of medical practice in America. The job will not be easy, but with the enthusiasm and cooperation which all staff members have shown this first year, it seems likely that provocative and rewarding experiences lie ahead for us all."

May the few formative years which have passed thus far help assure the hospital of continued growth and simultaneously help to inculcate in its people the on-going importance of change.

James L. Tullis, M.D.
Chairman, Department of Medicine

DEPARTMENT OF DIAGNOSTIC RADIOLOGY

The number of examinations performed this year was 56,863, 6.12% more than in 1978. This increase is within the guideline for voluntary cost control and reflects the staff physician's efforts at cost containment by more judicious use of radiological services. Increases occurred in the number of routine examinations with a slightly higher rise in the number of more sophisticated, time-consuming special studies.

Subspecialization in radiology has developed in two directions: one was necessitated by the complexities of the new technologies and techniques such as ultrasound and the invasive procedures utilizing catheters; the other was a response to the subspecialization in medicine and surgery which requires consultation services by diagnostic radiologists with an interest and special expertise in a particular organ or system.

The Public Health Council has approved the hospital's Determination of Need application for a CT body scanner because the Deaconess is a tertiary care specialty referral hospital; such a unit will be installed in early 1980. Computed tomography combines x-rays with a non-film detecting system. Radiation delivered in a circumferential manner about the body is detected by sensitive crystals. This information is transmitted to a computer which integrates the data spatially and provides a quantitative measure of the x-ray attenuation caused by various body structures. The information is then displayed in anatomic cross sections in various shades of gray. With the acquisition of a CT scanner, we expect to reduce the number of invasive procedures that are often more costly and always carry a higher risk of complications than the relatively innocuous CT scan. Computed tomography has almost eliminated the need for pneumoencephalography and is expected to reduce the number of arteriograms, surgical procedures and patient days in the hospital. The need for purchase of other special x-ray equipment will be diminished. All of these factors decrease the overall cost of medical care. In addition to the diagnostic capabilities of CT, patients undergoing radiotherapy require computed

tomography to precisely determine the location and extent of tumor. Because of this, Diagnostic and Therapeutic Radiology will work together in the diagnosis and treatment planning of patients undergoing radiation therapy.

One means of keeping our clinical colleagues informed of the advances in diagnostic radiology is joint conferences. In addition to the many clinical conferences which are attended by a representative from the Radiology Department, we have recently established weekly conferences in collaboration with the Pulmonary Medicine and the Neuroscience groups, where cases are presented and diagnostic and therapeutic problems discussed. Continued interaction of the clinical departments with the service departments result in better patient care through education. This type of interaction with the clinical specialties is imperative because 60% of all hospital admissions require the service of radiology.

The quality of service provided by the Diagnostic Radiology Department is usually the criterion for its success in the hospital, and we have always been proud of our record. As the Deaconess has embarked on a more ambitious teaching and research program, our department has adapted to these new demands without neglecting our service responsibility. The Diagnostic Radiology Residency Training Program was reinstated in 1978. We currently have one second-year and two first-year residents and have accepted three first-year residents for the 1980-81 academic year. We have extended the Fellowship Program to include ultrasound, nuclear medicine, and angiography and special procedures. All Fellowship positions are filled, and we are currently reviewing applications for the 1980-81 academic year.

Research projects in the department also interface with the clinical subspecialties in surgery and medicine. Investigations concerning renal failure with high dose angiography, hepatic artery infusion chemotherapy, ultrasonic imaging of the carotid arteries, and single photon emission brain and body imaging are being carried out. These projects involve active collaboration with the nephrology, oncology, and neurology services of the Deaconess.

In summary, the department has developed subspecialization in concert with expanding technologies and the needs of our clinical colleagues. We will continue to deliver high quality health care while developing our teaching and research efforts in an atmosphere of mandatory cost containment.

Melvin E. Clouse, M.D., Chairman
Department of Diagnostic Radiology

DEPARTMENT OF PATHOLOGY

Despite the absence of major building programs and the static number of beds, the constant active change which occurs in this progressive hospital can well be illustrated by the simple fact that the volume of work in Pathology increased about 10% in 1978-79 in comparison to 1977-1978.

To express change in terms simply of volume would be grossly misleading, of course. The most revealing and downright exciting part of what has taken place comes from the addition of procedures that provide real advances in the care of patients. Until the last few years, there was no way to determine the actual blood levels of potent drugs used for treatment. The

dosage was computed empirically and still must be for many drugs. But, for some important ones, there are now methods in use in the laboratory which measure the blood levels of the agents and allow control of dosage within the range of clinical effectiveness and below the toxic levels. It removes the guesswork about individual differences of drug levels at a standard dose due to the effects of relative amounts of fat, protein and body fluid in total body weight, the efficiency of hepatic breakdown of agents, the efficiency of renal excretion of agents and the multiple other factors that influence drug levels and the response to drugs. It seems clear that therapeutic drug monitoring will be expanded greatly in the future in the

chemistry laboratory under Dr. Gerson.

Another steady expansion has occurred in the effort to identify "markers" for different kinds of cancer. These are in general distinctive proteins or polypeptides produced by different cancers and identifiable in circulating blood. They have been used in the attempt to identify cryptic cancers and also to monitor the success of treatment of cancer or to identify recurrence before it is otherwise evident. One of the first of these identified, the carcinoembryonic antigen, has been used for many years. Although it is not specific for colonic carcinoma, as it was thought to be for some time, it is increasingly widely used in the hospital, especially for monitoring cancer patients. It seems clear that we still are in the infancy of the use of such marker substances and that the greatly increased





use is nothing in comparison to what will occur as more are discovered.

Similarly, in aiding the precise histologic diagnosis of the very small percentage of cancers that are baffling to classify even histologically, there are now some immunohistologic techniques which identify specific substances produced by some tumors. Although this is a major step forward, it is important to only a small group of patients. There are many different kinds of cancer and the emphasis on precision in diagnosis is not just for intellectual satisfaction but because of vast differences in behavior among different cancers and the considerable difference in treatment for the respective kinds.

An additional illustration of the sophisticated kinds of techniques which are available to the small segment of the hospital patients whose lives are radically changed by a puzzling disease is the elegant study of muscle biopsies by Dr. Hedley-Whyte, our neuropathologist, in conjunction with the neuropathologists at Children's Hospital. Although such patients form a small group, precision of diagnosis of these patients, particularly those with intrinsic muscle diseases, allows intelligent clinical management. The techniques used include not only refined light microscopy but also electron microscopy and enzyme histochemistry.

One could detail many more examples of this exciting era of medicine within our hospital with always increasing emphasis on precision and on the ability to identify the new techniques which are clinically significant. One could also touch on the tremendous effort in education which the department makes or describe the research which provides some of the nucleus for clinical change.

One of the most important reasons why the department laboratories can respond to esoteric problems and can develop

sufficient volumes of tests and experience in such areas is the large pool provided by institutional cooperation. The large volume of the complex and mundane allow sophistication. (To the patient with the mundane, the problem and its resolution are as important as a difficult problem and in fact seem unique to him.) It is the network of Deaconess general staff, Lahey Clinic, Joslin Clinic, Overholt Clinic, New England Baptist Hospital and Brooks Hospital which provides this strong base and a system which is hard to beat.

The end of the year 1978-79 brought radical change in the department in terms of people. We are fortunate to have added to our staff Dr. Mark L. Silverman, Dr. Zebulon B. Vance, Dr. Monica V. E. Gallivan and Dr. Henry M. Steady. Dr. Janet D. Lapey has left because of a long illness and Dr. Sanford R. Kurtz has moved to University Hospital. It is always difficult to lose such contributing members of the department. But when the long-time Chief of Clinical Pathology and the Chairman of the Department for four years retires, the department has passed into a new era. Dr. Bradley E. Copeland has his imprint all over clinical pathology, the development of which over 29 years was largely due to his efforts. To say that he will be missed is a gross understatement, but the department is fortunate in the leaders which he trained and left to not only carry on a magnificent tradition but to progress aggressively.

Merle A. Legg, M.D., Chairman
Department of Pathology

DEPARTMENT OF SURGERY

The theme of this year's New England Deaconess Hospital Annual Report is "Growth and Change". One of the most important changes in recent years in surgical technique has been from macro to micro surgery. In the past surgeons have removed diseased organs and tissue seen only by the naked eye using finely tooled instruments for cutting, suturing and hemostasis. Today, the naked eye is being aided by the mobile dissecting microscope. The scalpel is being replaced by laser and ultrasound. These sophisticated techniques provide the surgeon with tools for the precise, controlled removal of unwanted tissue masses.

Gentle, accurate manipulation of tissues is the essence of surgical technique. The mobile operating binocular dissecting microscope has brought to many surgical specialties the advantages of stereoscopic magnified vision and powerful illumination. The resulting gentler, more accurate manipulation of tissues than is possible with the naked eye has made standard operations safer and their results in experienced hands more predictable, and has permitted the development of new methods to deal better with certain disorders. These trends will certainly continue and hospital planning needs to take their special requirements of instrumentation and technique into account. Apart from other considerations, reduced patient morbidity and improved results make the adoption of these techniques highly cost effective to the hospital and to society. Already, we are renovating the surgical suite to have one operating room totally equipped for microsurgery.

It is difficult to describe adequately to one who has not viewed the living tissues through the microscope the extent to which magnification and bright light facilitate the gentle handling of tissues. The slightest trauma is immediately apparent. The normal slight physiological tremor is reduced, literally steadying the hand of the surgeon. Accurate dissection of tissue planes is greatly facilitated. Delicate instruments have been devised. Automatic retractors, bipolar coagulation forceps that avoid the spread of coagulating current, fine suction apparatus and a host of microforceps, microscissors, dissectors, needles and suture material permit the

gentlest possible handling of the tissues. These aids are particularly adapted to neurosurgery, otolaryngology, ophthalmology and vascular surgery and will find wider applications in other fields of surgery.

Dr. Edward Tarlov from the hospital's Section of Neurosurgery, in a report to me, explains that the introduction of the operating microscope to neurosurgery took place in 1961 through the efforts of the otolaryngologist, William House, collaborating with a neurosurgical team. Since then, he states in his report, the techniques have been constantly modified and improved. For example, it is now usually possible with the microscope for an experienced team to safely and completely remove acoustic neuromas beneath the brain without damage to facial nerve function.

The place of a clip across an intracranial aneurysm to obliterate it and prevent further hemorrhage ordinarily requires a deep exposure beneath the

brain. Bright light, magnification and microsurgical instruments and technique reduce the manipulation of the brain and its sensitized arteries. Bipolar coagulation can be used to shrink the aneurysm for ligation of the carotid artery in the neck.

The same advantages and principles of microsurgery apply to pituitary tumors, spinal tumors, and vascular malformations within the spinal canal. Growths lying within the spinal cord itself, ordinarily considered inoperable, can in favorable situations with the microscope be separated from the normal spinal cord. It is possible for an exceptionally gifted neurosurgeon to execute most procedures with the naked eye but on the whole the consistent safe performance of the surgery with minimal postoperative morbidity is greatly aided by the use of microtechnique.

Dr. Peter Oliver, Section on Otolaryngology, states that otolaryngologists have

pioneered in the field of microsurgery since 1923. Miniaturization of instruments and the continuing development of prosthetic replacements for middle ear structures have revolutionized surgery for conductive deafness and chronic ear infections. Dr. Oliver says that with the addition of the Hospital's new Cavitron CO2 laser, microsurgery of benign and malignant growths of the respiratory tract and pharynx has entered a new era. Tumors previously requiring extensive (sometimes cosmetically and functionally mutilating) operations can now be excised with microscopic precision and minimal bleeding through a natural orifice with the laser beam.

In addition to Drs. Tarlov and Oliver, a third surgeon to whom I am indebted for a specialized report is Dr. Lloyd Aiello, Ophthalmology. He reports that early in this century, the microscope was converted to ophthalmic use in the form of a slit-lamp allowing a highly magnified exami-



10 nation of the front portion of the eye, that is the cornea, anterior chamber, iris and lens. With more recent advances in the technology, microscopic surgery is now used extensively for corneal transplantation, cataract surgery, and glaucoma surgery. Dr. Aiello reminds us that, at the New England Deaconess Hospital with its diabetic population, a major use of microsurgery is in a very precise procedure called 'vitrectomy' to correct vitreous hemorrhage or diabetic retinopathy, now the leading cause of new blindness in patients' economically productive years. He states that precise microsurgical techniques are yet in their infancy. Advancing techniques in lens design, fiberoptic

delivery of white light and laser light, television display techniques, and stereotactic instrumentation will, in the future, permit even more precise surgical micro-manipulation of intraocular structures here at the New England Deaconess Hospital.

To quote Dr. Tarlov, "Microsurgical methods are firmly established as the most important advance in surgical technique of the past several decades. There is no question that future developments and new applications will benefit our patients in the years to come."

Cornelius E. Sedgwick, M.D.
Surgeon-in-Chief



Lois Krall, President of the Friends, discusses an organ selection with Margaret McLean. Mrs. McLean, who is an employee as well as a Friend, volunteers in the hospital chapel.

FRIENDS OF THE DEACONESS

Each year the Friends of the Deaconess continue to grow and change. Each year our program is based on past history, and for that reason the Friends have started to gather the facts, figures, and pictures which reflect their history. The story of the past tells of continuing gifts to the hospital since 1934 of such varied things as medical equipment, furniture for solariums, air-conditioning units for employees' office areas, as well as nursing scholarships. The first library cart was bought by the funds of the Friends, and the beauty shop was established and recently renovated and refurbished. Some of the colorful plantings around the various buildings have been funded by the Friends as well as generous contributions to the buildings themselves. The most recent gift of \$50,000 in March, 1979, was given towards the amount needed for the CRI addition.

A changing world has made us realize that we must change to grow. In order to attract new support for the Friends, we are seeking new activities to interest and broaden our membership. Our first plant

sale in May, which we hope to make an annual event, was enthusiastically received.

While change and growth are to be desired, there is one factor which remains constant, and that is our desire to help the patients in the hospital wherever needed. The dedication of our many volunteers, whether or not a member of the Friends, attests to this fact, and their gift of hours of service is gratefully acknowledged.

We welcome suggestions for additional ways in which to assist those in need. You who are interested in the hospital are invited to join the Friends and become a part of this vital group of concerned people.

The Friends wish to express their appreciation to the Hospital for providing enlarged office space in Harris Hall which will soon serve as a meeting-place for members. Please plan to join, visit us soon, and suggest how we may better serve the New England Deaconess Hospital.

Mrs. Leo P. Krall, President
Friends of the Deaconess, Inc.

JOINT CENTER FOR RADIATION THERAPY

This has been the eleventh year of the Joint Center for Radiation Therapy. During this last year, 2378 new patients were seen. This represents a 9% increase in new patients. The distribution of these patients by Joint Center Hospitals is as follows:

New England Deaconess Hospital	705
Beth Israel Hospital	554
Peter Bent Brigham Hospital	351
Children's Hospital Medical Center	246
Sidney Farber Cancer Institute	215
Boston Hospital for Women	175
Faulkner Hospital	132

Currently the Joint Center facilities are at, and on occasion exceed, capacity. This has created serious scheduling problems, patient delays and increase in equipment failure. The most practical solution is to provide new therapy equipment for our increasing patient demand. Unfortunately, there is no likelihood of this occurring until approximately 1983 at which time it is hoped that increased facilities will be made available through the Children's Hospital Medical Center. A Determination of Need application is being prepared by the Children's Hospital for submission shortly. Unfortunately this will not solve the problem until 1983 and it is not clear how the Joint Center will be able to meet these needs. One solution suggested is working extended hours and running at least some of the machines for a second shift. Unfortunately, despite vigorous recruitment, we have been unable to find additional technologists willing to work a second shift. Increased effort to solve this problem will be required if we are to meet the demand of our ever increasing patient number while at the same time not compromising the current standards of treatment. A less pleasant alternative may be to limit the number of patients treated. We shall make every effort to avoid this unpleasant alternative but if no other arrangements can be made we may come to this.

Dr. Peter Mauch has joined the professional staff of the Joint Center for Radiation Therapy. Dr. Mauch completed his residency at the Joint Center and for this

past year has been working clinically at the Beth Israel Hospital as well as actively participating in laboratory investigation. Three residents completed their training: during this year: Drs. Peter Mauch, Christopher Rose and Robert Goebel. Dr. Goebel is now a member of the Presbyterian Inter-Community Hospital in Whittier, California. Dr. Rose has spent this last year of training in Great Britain working at the Institute of Cancer Research at the Royal Marsden Hospital. He will be returning later this year to join the staff of the Joint Center for Radiation Therapy. There are three new post-doctoral trainees in the Radiation Therapy Program, making the number of residents and fellows 14. The collaborative program in Radiologic Physics and Health Sciences, which is run under the auspices of the Harvard School of Public Health, Massachusetts Institute of Technology and our department of Physics and Engineering, has 12 masters degree students and 2 doctoral students. There are 10 students in our Radiologic Technology training program.

The multifaceted research and development activities at the Joint Center for Radiation Therapy all have as their goal improvement in the treatment of malignant disease. The common theme is to improve cure with the diminished likelihood of complications. This requires attention to the basic biology of the disease and the normal tissues, clinical research, technologic advance and the proper transfer of highly sophisticated technology to patient care. This research is greatly augmented by the presence of the Leonard Hill Research Data Resource. This has been in operation now since December, 1977, with a computer based information system which allows clinicians and scientists immediate access to current pertinent medical and scientific literature, both on file at the Joint Center and with on line research capacity utilizing medical library facilities in a number of centers within the United States. The research productivity of the Joint Center has resulted in 53 scientific publications which are included in the appended bibliography. This research can be divided into clinical, physics and engineering, and basic biologic projects. They will be briefly described below.

A major clinical research activity of the Joint Center continues to be the primary treatment of breast cancer without mastectomy. Currently approximately 120 patients per year are being

The New England Deaconess Hospital Division of the Joint Center for Radiation Therapy is housed in the lower levels of the Meissner Laboratory building.



12 treated in this fashion. The results continue to be encouraging with the Joint Center being asked to present these results at an increasing number and variety of national and international meetings. We continue to modify the technique in order to result in a maximum likelihood for cure with the best cosmetic and functional results. Another major interest of the Joint Center has been in the study of Hodgkin's disease and other tumors of the lymphatic system. These studies are largely concerned with determining when radiation therapy or chemotherapy should be given, and when combined treatment is best offered. Using such combined treatment, there has been a striking improvement in the success of treatment of some children with non-Hodgkin's lymphoma. The latter is consistent with a continuing interest in the interdisciplinary management of pediatric tumors. Two new projects in urologic malignancies were begun this year; one concerning pre-operative irradiation for bladder tumors and the other a study of the importance of hormonal markers in certain testicular tumors treated by radiation therapy. We continue to attempt to quantify the results of alternative treatment methods in terms not only of survival, but also in terms of the disability and morbidity produced. A whole new methodology must be described to score the relative disability and morbidity produced by the alternative therapeutic maneuvers.

The biologic laboratories of the Joint Center for Radiation Therapy have been quite productive during this last year. These activities are housed in the Shields Warren Radiation Laboratory of the New England Deaconess Hospital, the Sidney Farber Cancer Institute and the Harvard School of Public Health. The mechanism by

which cells develop resistance to the drug adriamycin continues to be a major focus of investigation. Somatic cell genetic techniques have been added during this year, to clarify and better understand the mechanisms of such resistance. It is of interest that there may be a possible relationship between adriamycin resistance and radiation sensitivity. Important studies on the production of leukemia by viruses continue to be investigated in tissue culture. Techniques have been developed in Joint Center laboratories for the long term in vitro growth of mouse as well as human bone marrow. Study of mouse bone marrow made leukemia in vitro may allow understanding of the leukemic process in the mouse and ultimately in man. These long term in vitro bone marrow culture systems have also been studied to determine how the normal blood forming tissues proliferate and respond to radiation and chemotherapeutic agents. This system allows separation of the most primitive cells by their proliferative potential as well as allowing independent assessment of the effects of radiation and chemotherapy on the growing cells, as well as the "soil" in which they proliferate. A recent important advance has been the development of an in vitro technique which will allow detection of potential teratogens (those agents causing birth abnormalities when administered during early pregnancy). While this seems quite removed from our general area of research this has developed from a basic research project in

understanding tumor biology and is but another example of the unexpected insights to be gained from scientific research. The genetic effects of radiation and drugs continue to be studied using the frequency of induction of histocompatibility mutations. These studies are important both to immunology, transplantation biology, and determining the basic risk of environmental mutagens. Thus, our laboratory activities this year reflect an increasing awareness of the potential hazards of physical and chemical agents in our environment. Continued investigation of radiation damage and its repair in cells from rodents as well as cells derived directly from humans indicates a very rapid repair process. DNA repair appears to be decreased in patients who have an elevated incidence of malignancy, perhaps suggesting a common mechanism involved in both the prevention of tumors and radiation repair.

The division of Physics and Engineering is engaged in an extensive developmental project on computer controlled radiation therapy, partially supported by the National Cancer Institute and conducted in collaboration with the Massachusetts Institute of Technology. It is the purpose of this project to increase the dose to tumors while at the same time decreasing the damage to normal tissues. Patients have now been treated with such computer controlled radiation on the 12 million volt accelerator at the New England Deaconess Hospital. We continue to develop more complex strategies to further increase the tumor to normal tissue ratio. In collaboration with the Massachusetts General Hospital and the International Atomic Energy Agency, we are developing techniques for inter-comparison of x-ray and electron doses throughout the world. A subject of increasing importance, is the use of computer tomography for radiation therapy. This is being actively studied at the Joint Center.

In summary, patient care, education, and a multi-faceted research program continue to be major activities of the Joint Center for Radiation Therapy. These programs extend from basic biologic observations of the mechanisms of tumor induction, mutagenesis and genetic repair to clinical investigation concerned with improving survival and function of patients with cancer, while reducing the damage to normal tissues. All these activities have as their goal cancer prevention or improved treatment of patients so afflicted.

Samuel Hellman, M.D., Director
Joint Center for Radiation Therapy



Room for patients awaiting radiation therapy.



SHIELDS WARREN RADIATION LABORATORY

A broad range of investigative work in the radiological sciences is conducted at the Shields Warren Radiation Laboratory.

The work of the Radiation Biology Laboratory under Dr. Henry I. Kohn has continued to center on mutations that occur spontaneously and as a result of X-ray and chemical treatment in the large group of genes that affect the transplantation of skin, using the mouse as an experimental model. The results continue to show that the X-ray induced mutation rate is much lower than generally projected. The mu-

tant animals produced in these experiments are of great interest for the genetics of the immune system, especially for the analysis of various steps in the system itself, and are being sent to many laboratories for use in their experiments. During the past several years, Dr. Kohn has spent a major segment of his time on the National Academy of Sciences Committee on Nuclear and Alternative Energy Systems. That Committee's report, covering the entire energy problem of the country, will be issued late in 1979.

In Experimental Nuclear Medicine, under the direction of Dr. James Adelstein, several research studies are underway. One of the areas of interest has been radiation damage in chromatin extracted from cultured mammalian cells. In addition, the radiolytic interaction of the polypeptide hormone, glucagon and selected amino acids has been studied. In partic-

ular, the formation of radiation-induced cross links has been investigated and the role of the individual aqueous radicals in this process evaluated.

In another study, the uptake and radiotoxicity of the Auger emitter Thallium-201 has been determined in V79 Chinese hamster-cultured lung fibroblasts. Because this intracellular cation is not bound to cellular elements, special methodology has been required for the rapid separation of cells from radioactive media in order to measure cellular uptake. Using this method, the rates of uptake of Tl-201, Rb-86, K-43, and K-42 have been determined and found to be linear with increasing concentrations of radioactivity in the media.

The radiotoxicities of Tl-201, K-43 and Rb-86 have also been determined in V79 cells, and a preliminary study of the uptake of several ^{99m}Tc and ^{111}In compounds used routinely in nuclear medicine has

14 also been conducted. In another project, the synthesis of iodine-labeled compounds for toxicity studies in exponentially growing cells and in culture has continued.

The major focus in Experimental Diagnostic Radiology, under Dr. Herbert Abrams involves neoplastic disease. In this area the laboratory is attempting to identify new agents for imaging primary and secondary tumors in the liver by computer axial tomography; factors involved in the recruitment of tumor blood supply; mechanisms responsible for the autonomy of the tumor's vascular bed; methods to enhance identification of tumors by phar-macoangiography; the characteristics of lymph nodes in response to immune mechanisms and tumor metastasis; immunologic factors in the regression of a syngeneic tumor model. In a parallel investigation the group is exploring the humoral factors responsible for recruitment of a collateral blood supply following obstruction of a major artery. Additional studies are investigating the characteristics of the coronary, renal, gastrointestinal and central nervous system blood supply in a number of disease states; the role of the renin-angiotensin-aldosterone system in pathophysiology of hypertension and renal failure; the use of computer axial tomography for assessing ischemic myocardium. Finally, the myocardopathy induced by adriamycin and radiation of the mediastinum are being explored.

Henry J. Kohn, M.D.
Director
Shields Warren Radiation Laboratory

CANCER RESEARCH INSTITUTE

The most important event of the year for the Cancer Research Institute was the beginning of construction of a wing consisting of five floors adding approximately 8,000 square feet of laboratory and office space to the existing 21,000 square feet of the original building. Completion of the structure and finishing the first and third floors are expected to be accomplished by the early part of 1980. The remaining floors will be finished as need arises and research support becomes available.

Also during the year, Dr. George H.A. Clowes and his group moved their laboratory from Boston City Hospital into temporary quarters in the existing Institute building before occupying space in the new wing.

Biochemistry

Consolidation of this laboratory under the leadership of Dr. W. Eugene Knox, and the establishment of other independent but related groups have produced broader and more varied biochemical research in the Institute. Biochemistry retains its interest and advisory capacity in the exploitation by others of the physiological consequences of known metabolic reactions and has concentrated on fundamental problems of the metabolism of proline, one of some twenty amino acids from which proteins are constructed, and one that is usually called "non essential" because it can be synthesized in the body if it is not in the diet.

Biochemistry's studies of proline have emphasized that it, as well as the other amino acids, are all essential for the synthesis of the specialized proteins of the body, and that the enzyme reactions which make this nutritionally nonessential amino acid are crucial for the body's health and repair. Certain organs, and

others at some ages or with particular diseases, cannot make proline. These tissues are then completely dependent upon the importation of proline from other tissues, or from the diet. The reactions by which proline is made in the body and the nature of the controls for these reactions are therefore important to know. The laboratory has found that the route of synthesis (from glutamate) described in textbooks for the past thirty years occurs only one ten-thousandth as rapidly (if at all) as another route. This spins off from and conserves an intermediate of the urea cycle (ornithine) where surplus amino acids are normally disposed of. As expected, growing and neoplastic tissues which must incorporate proline into the proteins of which they are composed show an enhanced ability to make proline by the newly recognized route.

Experimental Pathology

The research of this laboratory, directed by Dr. Shields Warren, has continued studies of radiation carcinogenesis and added studies of the effects of nonionizing (radar) radiation. Dr. Warren was a member of the National Academy of Sciences Committee appointed to study the safety of the PAVE PAWS radar on Cape Cod. The effects of asbestos and glass wool fibers when absorbed within the body are also being investigated.

Two functional rat tumors, an insulin-oma and a pheochromocytoma, induced by radiation and readily transplantable to other rats have been maintained either in the Institute's tissue bank or in living rats.

Cooperative research has continued with the Harvard Laboratory of Human Reproduction and Reproductive Biology with special reference to the work of Dr. Clark E. Brown on induction and prevention of cancer of the male genitourinary tract. Such research has been initiated also with Dr. William M. Manger of the National Hypertension Association, Inc.

Mammalian Differentiation

Under the direction of Dr. Annemarie Herzfeld, this laboratory is comparing effects of injected hormones and of starvation on the normal enzymic composition of liver, small intestine, and spleen in developing and mature rats. Treatments, which in liver do not affect the concentrations of some enzymes that metabolize amino acids and pyrimidines, evoke some profound changes in the other two tissues and thereby alter the metabolic balance of the animal. In studies of spleen the Laboratory has discovered a new enzyme activity associated with nucleic acid metabolism; this has been described previously only in a strain of bacteria infected with a virus

New addition to the Cancer Research Institute presently under construction.



16 that contains DNA with an unusual nucleotide. The group is now investigating the potential regulatory role of this enzyme in mammalian DNA synthesis and determining its activities in tissues, blood cells, and plasma of patients with and without neoplastic diseases.

Medical Oncology

This section of the Department of Medicine located in the Institute under the direction of Dr. Jacob Lokich has completed or is at present carrying our chemotherapy studies which include: Phase I study of Cis-platinum administered by 120-hour continuous infusion; combined hepatic irradiation and intro-arterial infusion of 5FU; and continuing studies of continuous infu-

coagulopathies in patients with malignant disease, have been completed. In collaboration with the hospital's nutrition service, studies of the impact of therapeutic modalities on protein synthesis have been initiated and are continuing. Collaborative studies with Dr. Norman Zamcheck of the Mallory Institute on tumor markers have been initiated, employing the stored serum and plasma bank which was established last year.

Nutrition

Considering the risks and benefits of providing nutritional support to hospitalized patients, the Nutrition Laboratory under Dr. George Blackburn is acutely aware of its responsibility to translate its basic research

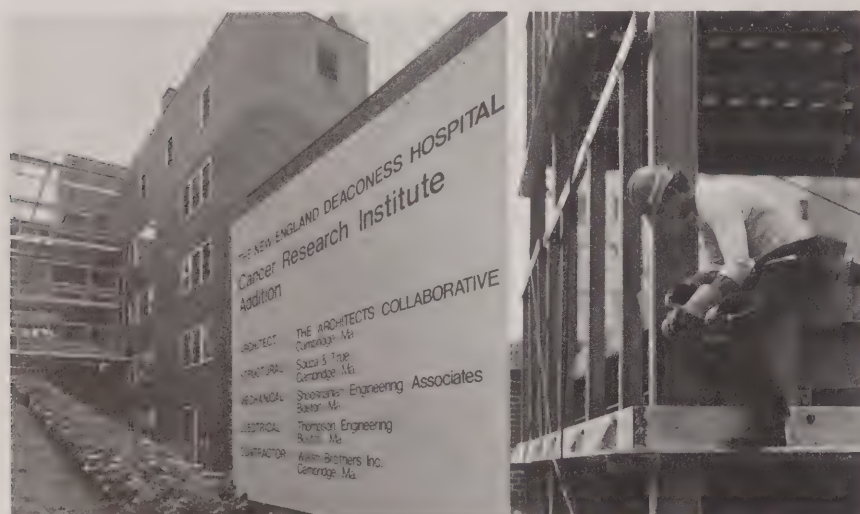
Surgical Metabolism

In this laboratory, under the direction of Dr. George H. A. Clowes, Jr., protein wasting and insulin resistance, characteristic of patients with severe injury, infection, or liver failure are being studied to delineate in greater detail the nature of these abnormal metabolic events, and to determine their causes. Amino acids are found to be released from degraded muscle protein at rates three to four times that observed in normal fasting. Measurement of their uptake rate by the liver and other central tissues for production of glucose or for synthesis of the proteins required for survival has proven useful in predicting the outcome of illness and directing supportive therapy. At this time, one or more substances, probably peptides of small molecular weight, detected in the plasma of such patients have been demonstrated to increase significantly the rate of protein breakdown and to interfere with the oxidation of glucose in normal incubated muscle. Efforts are being directed toward identifying these agents as well as their mode of action in the expectation that their control will improve the treatment of these serious illnesses.

Transplantation and Immunology

Under the leadership of Dr. Anthony P. Monaco, studies have continued on the mechanism of skin graft prolongation induced in immunosuppressed mice by the infusion of donor bone marrow. Experiments have focused particularly on the role of various subpopulations of lymphocytes in graft prolongation. The role of the spleen in graft enhancement has also been investigated. A new area of investigation has involved development of a model of graft prolongation in suppressed mice given blood transfusions before grafting. This is particularly relevant to clinical transplantation as there is evidence that blood transfusions before cadaver renal transplantation prolong graft survival. In addition, in vitro studies on cell-mediated immune response to mouse mammary tumor cells are in progress.

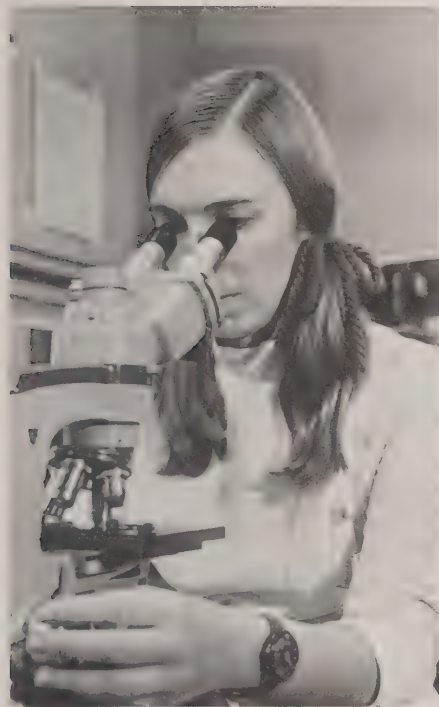
A study on the immunological diagnosis of bladder cancer has been completed. An antiserum was prepared to a



sion programs for treatment of various metastatic malignancies using VP 16, vinblastin, cyclophosphamide, and other drugs not previously applied in this manner. New studies have been developed for management of advanced breast cancer involving randomized comparative trials of combination chemotherapy or hormone therapies. Specific study programs involving collaboration between clinical areas of the Deaconess Hospital, the Cancer Research Institute and the Sidney Farber Cancer Institute and with the National Gastrointestinal Tumor Study Group are continuing. Studies on the natural history of colon cancer, particularly with regard to brain metastasis and on

into clinical applications whenever possible. Recent investigations using new technology of radioisotope methods and carefully designed animal experiments have provided clues to future approaches to optimal therapy, not only in support of comprehensive medical treatment plans, but also in disease prevention.

In addition to developing therapies for both intravenously and orally feeding patients with cancer and inflammatory bowel disease, surgical stress, and trauma, a hospital prognostic index has evolved from the systemic surveillance, assessment, and nutritional treatment of hospitalized patients, identifying those most likely to benefit from aggressive nutritional support. Advanced changes in the approach to patients' needs and improved delivery of nutritional therapy have played an important role in meeting the hospital's goals of patient care, education, research and training.



hypotonic saline extract urinary bladder tumor tissue, which, after absorption with normal tissues, was used to localize tumor associated antigens (TAA) in a Sephadex G-150 elution profile of urine from bladder cancer patients. A second antiserum was prepared to this TAA urine. From this work, an antiserum has been produced which may be utilized in assays for the diagnosis of bladder cancer.

Tumor Registry

As a significant part of the Hospital's cancer program, the Tumor Registry was reevaluated in April 1979, by the American College of Surgeons. At that time, 17,739 cases from 1967 to the present were on record and the condition of only 3.9% was unknown to the registry. This high rate of followup provides an index of the persistent supervision of patients given by physicians here, and also of the indefatigable searches by Marion H. Sciarappa, Registrar, and her staff. Since one third of our patients come from outside Massachusetts and from abroad, quite exceptional means must sometimes be taken to get back reports of patients' late condition.

Change has not failed to affect the Tumor Registry. Introduction of two new

assistants this year was accomplished without difficulty. Introduction of mini-computers with phasing out of the time-sharing option on MIT's big computer on which the registry was based has required a basic retooling that is not yet completed. The availability of small, decentralized computers dedicated to specialized tasks has caused this revolution, but it promises to improve procedures such as those of the registry and does so at less cost.

Research Administration Protocol Office

Operating under the dual jurisdiction of the Committee on Clinical Investigation and the Cancer Committee, the Office is responsible for ensuring proper compliance of research involving human subjects with federal agencies and the cancer program with the American College of Surgeons. Over 90 new clinical research protocols went through the approval process, including a sizeable number of experimental new cancer drugs and new chemotherapy approaches. The weekly interdisciplinary Tumor Board and Tumor Conference have gained increasingly prominent roles as forums for clinical consultation, and the eighth annual post-graduate symposium on cancer, this year on advanced disease topics, was extremely well received by a national audience of physicians. The Hospital's comprehensive cancer program was inspected successfully in April by the American College of Surgeons. Plans for the future include conversion of the manually collected Tumor Board data on cancer patients' inpatient stays to a machine information system based on that now employed by the Tumor Registry, allowing greater flexibility and sophistication of retrieval.

Office of Grants and Contracts

In view of the increasing difficulties research investigators face in obtaining adequate funding, the staff members of the Institute and the Departments of Medicine and Radiology have again maintained a consistent level of grant application submissions. The Office assisted in the preparation of 18 new grant and contract applications during the past year while continuing to manage 25 active grants and contracts awarded from six federal and private agencies. The level of research funding has reached \$1.2 million, one of the highest in recent Institute history. In addition, the Office now coordinates the Institute's Animal Care Committee and Biohazard Committee.

William V. McDermott, M.D.
Scientific Director

TREASURER'S REPORT

Financially 1979 was a very good year for the hospital. Net operating revenues amounted to \$61,905,000 vs. \$54,589,000 in fiscal 1978. While expenses were also higher we enjoyed a small gain from operations amounting to \$22,000. After non-operating income we showed an excess of revenues over expenses amounting to \$1,385,000.

Statistically, 1979 was the busiest year in the hospital's history as indicated by the following comparisons:

	1979	1978
Occupancy	94.1%	93.7%
Patient Days	170,639	166,862
Average Daily Census	459.9	458.4
Average Stay (days)	11.4	11.1
Surgical Procedures	7,532	7,062
X-rays Taken	56,863	52,573
Radiation Therapy	16,270	14,236
Laboratory Units	25,400,000	21,900,000

Looking ahead to fiscal 1980, it is hard to envision higher levels of activity because the Deaconess is currently operating at effective capacity. Moreover it appears likely that the long anticipated recession may be reflected in the demand for hospital services. Despite this possibility, we anticipate another busy year at the Deaconess.

James F. Morgan
Treasurer

Balance Sheets

September 30, 1979 and
September 24, 1978

Assets

Unrestricted Funds		1979	1978
Current Assets:	Cash and invested cash equivalents:		
	General	\$ 2,821,146	\$ 3,266,403
	Plant replacement and expansion	2,559,140	1,793,624
	Mortgage payment funds held in trust (Note 3)	450,000	450,000
	Accounts receivable—less allowance of \$1,762,261 in 1979 and \$1,277,242 in 1978 for uncollectible accounts	9,903,527	8,765,527
	Inventories of supplies—at cost	587,256	560,490
	Prepaid expenses, etc.	848,707	569,147
	Total current assets	17,169,776	15,405,191
Trustee Designated Funds:	Cash and invested cash equivalents	31,203	31,318
	Investments (market value: 1979, \$416,461; 1978, \$343,000) (Note 1)	409,160	332,631
	Total trustee designated funds	440,363	363,949
Funds Held in Trust—	Cash and invested cash equivalents (Note 3)	2,139,018	1,898,186
Property, Plant, and Equipment—	Net (Notes 2 and 3)	33,749,405	32,967,886
	Total	\$53,498,562	\$50,635,212
Restricted Funds			
Special Purpose Funds:	Cash and invested cash equivalents	\$ 302,853	\$ 137,642
	Investments (market value: 1979, \$818,968; 1978, \$752,000) (Note 1)	810,030	737,730
	Grants receivable	1,024,535	803,557
	Total Special Purpose Funds	\$ 2,137,418	\$ 1,678,929
Endowment Funds:	Investments (market value: 1979, \$5,248,304; 1978, \$3,382,000) (Note 1)	\$ 5,129,093	\$ 3,250,830
	Real estate, equipment, and furnishings— at cost, less accumulated straight-line depreciation: 1979, \$1,671,994; 1978, \$1,514,966 (Note 4)	3,910,935	3,987,246
	Total Endowment Funds	\$ 9,040,028	\$ 7,238,076
Plant Replacement and Expansion Funds:	Cash and invested cash equivalents	\$ 410,011	\$ 18,861
	Building Fund pledges receivable	217,018	52,739
	Total Plant Replacement and Expansion Funds	\$ 627,029	\$ 71,600

See notes to financial statements.

Liabilities and Fund Balances

Unrestricted Funds		1979	1978
Current Liabilities:	Accounts payable and accrued liabilities	\$ 5,621,762	\$ 5,297,462
	Accrual for settlements with third-party payors (Note 1)	3,076,659	2,632,518
	Current portion of long-term debt (Note 3)	450,000	450,000
	Deferred nursing school tuition	529,339	467,494
	Advances from third-party payors	304,909	359,611
	Total current liabilities	9,982,669	9,207,085
Deferred Revenue— Long-Term Debt (Note 3) Fund Balances	Third-party reimbursement (Note 2)	952,600	952,600
		14,275,810	13,953,127
		28,287,483	26,522,400
Total		\$53,498,562	\$50,635,212
Restricted Funds			
Special Purpose Funds:	Fund balances	\$ 2,137,418	\$ 1,678,929
	Total Special Purpose Funds	\$ 2,137,418	\$ 1,678,929
Endowment Funds:	Accounts payable	\$ 214,154	\$ 160,490
	Mortgage note payable (Note 4)	1,824,415	1,950,708
	Fund balances	7,001,459	5,126,878
Total Endowment Funds		\$ 9,040,028	\$ 7,238,076
Plant Replacement and Expansion Funds:	Fund balances	\$ 627,029	\$ 71,600
	Total Plant Replacement and Expansion Funds	\$ 627,029	\$ 71,600

See notes to financial statements

Statements of Revenues and Expenses

For the Fiscal Years Ended
September 30, 1979 (53 weeks) and
September 24, 1978 (52 weeks)

		1979	1978
Patient Service Revenue		\$69,503,789	\$59,499,550
Less—	Free care, provision for uncollectible accounts, contractual adjustments, etc.	(10,124,573)	(7,299,716)
Net Patient Service Revenue		59,379,216	52,199,834
Other Operating Revenue	(including \$1,395,567 in 1979 and \$1,304,553 in 1978 transferred from special purpose funds) (Note 1)	2,525,793	2,389,408
	Total operating revenue	61,905,009	54,589,242
Operating Expenses:	Professional care of patients:		
	General	12,870,792	11,290,064
	Special	23,677,875	20,584,589
	Household and property	4,470,113	4,084,713
	Dietary	3,665,493	3,308,168
	General services and administration	7,910,333	6,740,752
	Employee benefits	5,488,975	4,828,474
	Depreciation (Note 2)	1,897,145	1,813,318
	Research, etc.	1,395,567	1,304,553
	Interest	506,306	542,468
	Total operating expenses	61,882,599	54,497,099
Gain from Operations		22,410	92,143
Nonoperating Revenue:	Net income from endowment funds	429,144	355,725
	Donations and other distributions—net	193,986	196,614
	Interest, etc.	739,107	317,449
	Nonoperating revenue	1,362,237	869,788
Excess of Revenues Over Expenses		\$ 1,384,647	\$ 961,931

See notes to financial statements.

Statements of Changes in Fund Balances

For the Fiscal Years Ended
 September 30, 1979 (53 weeks) and
 September 24, 1978 (52 weeks)

	Unrestricted Funds	Restricted Funds		
		Special Purpose Funds	Endowment Funds	Plant Replacement and Expansion Funds
Balance, September 26, 1977	\$24,940,387	\$1,529,569	\$4,912,903	\$324,137
Increases (Decreases): Legacies, gifts, etc. (Note 1)	217,451	221,114	181,561	
Building fund receipts				118,827
Grants for specified purposes		1,179,996		
Investment income		49,906		20,949
Net gain on sales of investment securities		13,215	32,414	
Excess of revenues over expenses for the year	961,931			
Transfer to other operating revenue		(1,304,553)		
Total	26,119,769	1,689,247	5,126,878	463,913
Interfund Transfers-- Investment in buildings and equipment	402,631	(10,318)		(392,313)
Balance, September 24, 1978	26,522,400	1,678,929	5,126,878	71,600
Increases (Decreases): Legacies, gifts, etc. (Note 1)	145,571	219,206	135,864	
Distribution of funds held in trust (Note 1)			1,711,740	
Building fund receipts				862,361
Grants for specified purposes		1,451,449		
Investment income		90,520		11,136
Net gain on sales of investment securities		2,365	34,290	
Excess of revenues over expenses for the year	1,384,647			
Transfer to other operating revenue		(1,395,567)		
Total	28,052,618	2,046,902	7,008,772	945,097
Interfund Transfers-- Investment in buildings and equipment	383,424	(750)		(382,674)
Other	(148,559)	91,266	(7,313)	64,606
Balance, September 30, 1979	\$28,287,483	\$2,137,418	\$7,001,459	\$627,029

See notes to financial statements.

Statements of Changes in Financial Position of Unrestricted Funds

For the Fiscal Years Ended
September 30, 1979 (53 weeks) and
September 24, 1978 (52 weeks)

		1979	1978
Funds Provided:	Operations:		
	Gain from operations	\$ 22,410	\$ 92,143
	Add operating expenses not requiring current use of funds:		
	Depreciation (includes \$84,261 in 1979 and \$61,471 in 1978 charged directly to other operating revenue)	1,981,406	1,874,789
	Increase in deferred third-party reimbursement (Note 2)		65,000
	Amortization of bond discount	11,923	12,335
	Funds provided from operations	2,015,739	2,044,267
	Nonoperating revenue—net	1,362,237	869,788
	Total funds provided from operations and nonoperating revenue	3,377,976	2,914,055
	Unrestricted legacies	145,571	217,451
	Transfers from Restricted Funds—net	234,865	402,631
	Bank loan (Note 3)	760,760	1,051,972
	Total funds provided	4,519,172	4,586,109
Funds Applied:	Reduction of long-term debt—Authority (Note 3)	450,000	450,000
	Payments to funds held in trust—net (Note 3)	240,832	133,643
	Additions to property, plant, and equipment	2,762,925	2,636,130
	Increase in trustee designated funds	76,414	125,175
	Total funds applied	3,530,171	3,344,948
Increase in Working Capital		\$ 989,001	\$ 1,241,161
Summary of Changes in the Components of Working Capital:	Increase in current assets:		
	Cash and invested cash equivalents	\$ 320,259	\$ 3,023,852
	Accounts receivable—net	1,138,000	973,353
	Inventories of supplies	26,766	68,412
	Prepaid expenses, etc.	279,560	70,991
	Total	1,764,585	4,136,608
	Decrease (increase) in current liabilities:		
	Accounts payable, etc.	(324,300)	(731,266)
	Accrual for settlements with third-party payors	(444,141)	(2,193,579)
	Deferred nursing school tuition	(61,845)	(35,246)
	Advances from third-party payors	54,702	64,644
	Total	(775,584)	(2,895,447)
Increase in Working Capital		\$ 989,001	\$ 1,241,161

See notes to financial statements.

Notes to Financial Statements

1. Accounting Policies

General

The accompanying balance sheets of the Hospital are presented in two basic fund accountabilities of unrestricted and restricted funds. Fund balances restricted by outside sources are included in restricted funds and are distinguished from unrestricted fund balances allocated to specific purposes by action of the Board of Trustees (trustee designated funds).

Gifts and grants restricted by outside sources are added to the appropriate restricted funds. Restricted special purpose funds, when expended for current operating purposes, are transferred to unrestricted funds and are reported as other operating revenue.

Prior to 1979, the Hospital was a beneficiary of a non-discretionary trust held by others which was not reported on the accompanying balance sheets. During 1979, the trust's assets were distributed to the Hospital and are included in the accompanying financial statements as an addition to endowment funds.

It is the consistent policy of the Hospital to consider certain unrestricted legacies received (\$145,571 and \$217,451 in 1979 and 1978, respectively) as capital resources and to credit such receipts directly to unrestricted fund balances. Generally accepted accounting principles for hospitals, as set forth in the Hospital Audit Guide issued by the Committee on Health Care Institutions of the American Institute of Certified Public Accountants, require the reporting of such amounts as non-operating revenue. Had the aforementioned amounts been so reported, the Hospital would have reported an excess of revenues over expenses of \$1,530,218 in 1979 and \$1,179,382 in 1978.

Investments

Investments are stated at cost or, if received by gift or bequest, at fair market value when received. Substantially all of the Hospital's investments are included in an investment pool which is operated on the "market value" method whereby each participating fund is assigned a number of units based on the market value of the assets of the pool at the time of entry of the fund into the pool. Income of the pool is allocated to participating funds based on their respective shares of the pool.

Estimated Settlement with Third-Party Payors

Preliminary calculations of final cost reimbursement adjustments relative to third-party contracts with Blue Cross and Medicare are reported in the accompanying balance sheets as a current liability. Cost reports to be filed for the current year, as well as Blue Cross cost reports filed for 1976,

1977, and 1978, and the Medicare cost report filed for 1978, are subject to final determination by the reimbursement agency under each program. Variances between preliminary calculations and final settlements are included in the statements of revenues and expenses in the year in which the settlements occur.

Reclassifications

Certain 1978 amounts have been reclassified to conform to the 1979 presentation.

Other

Other significant accounting policies are set forth in the financial statements or in the notes which follow.

2. Property, Plant, and Equipment

Property, plant, and equipment of unrestricted funds are stated at cost less accumulated depreciation and are summarized as follows:

	1979	1978
Land	\$ 640,846	\$ 640,846
Buildings	20,688,992	18,926,673
Fixed equipment	20,448,515	19,647,377
Major movable equipment	10,281,307	9,373,601
Construction in progress	262,134	1,155,131
Total	52,321,794	49,743,628
Less accumulated depreciation	18,572,389	16,775,742
Property, plant, and equipment—net	\$ 33,749,405	\$ 32,967,886

Depreciation is computed using the straight-line method over the estimated useful lives of depreciable assets. As to certain depreciable assets acquired before 1971, the Hospital uses accelerated depreciation methods to determine reimbursable costs under a third-party reimbursement agreement. Revenue attributable to the excess of accelerated over straight-line depreciation has been deferred and will be added to income when the depreciation timing differences reverse.

3. Long-Term Debt

On November 8, 1973, the Massachusetts Health and Educational Facilities Authority (the Authority) sold \$14,900,000 principal amount of revenue bonds, designated New England Deaconess Hospital Issue, Series A, and loaned the proceeds therefrom to the Hospital. With certain exceptions, principally the Medical Office Building and Kennedy Hall, all of the Hospital's land and buildings (including contents) are pledged as collateral in connection with the mortgage conveyed by the Hospital to the Authority. The Hospital has also granted to the Authority a first lien on certain defined gross receipts (including related accounts receivable) as additional security for payment of the mortgage.

The mortgage agreement provides for payment, to funds held in trust, of an initial deposit of principal and interest and subse-

quent monthly payments in amounts proportionate to the Authority's (a) annual principal payments on sinking fund instalments, ranging from \$450,000 in 1980 to \$525,000 in 2005 and (b) semiannual interest payments at rates varying from 4.8% to 5.7% over the lives of the bonds.

During 1978 and 1979 the Hospital financed the expansion of existing parking facilities through a bank loan. Under the terms of this financing agreement, interest on the outstanding debt, which is due March 29, 1983, is payable monthly at a rate of 1% in excess of the bank's prime lending rate. The bank's prime rate at September 30, 1979 was 13.5%. This agreement is secured by a mortgage on the parking garage addition and a lien on defined garage facility net income.

Long-term debt at year end is summarized as follows:

	1979	1978
Authority	\$12,650,000	\$13,100,000
Less unamortized discount	186,922	198,845
Net	12,463,078	12,901,155
Bank loan	1,812,732	1,051,972
Total	\$14,275,810	\$13,953,127

4. Endowment Funds Mortgage Note Payable

The endowment funds mortgage note bears interest at 5¼% and is payable in monthly instalments through January 1991, including, at September 30, 1979, \$112,000 due within one year. The Medical Office Building is assigned as collateral under the terms of this mortgage.

5. Employees' Retirement Plan

The Hospital has a noncontributory defined benefit retirement plan covering all employees working 1,000 hours or more per year. Total pension expense aggregated \$1,800,000 in 1979 and \$1,700,000 in 1978 including, in both years, amortization over a forty-year period of the unfunded actuarially computed past service liability. Such unfunded liability approximated \$7,400,000 as of October 1, 1978, the last plan valuation date. The actuarially computed value of vested benefits under the plan as of the last plan valuation date exceeded the total of the pension fund net assets and balance sheet accruals by approximately \$200,000.

6. Malpractice and Comprehensive Liability Insurance

Effective April 1, 1976, the Hospital changed its malpractice and comprehensive liability insurance coverage from an occurrence basis policy to a claims-made policy. The claims-made policy, which is subject to renewal on an annual basis, covers only claims actually made during the term of the policy, but not those occurrences for which claims may be made after expiration of the policy.

Auditors' Opinion

New England Deaconess Hospital:

We have examined the balance sheets of New England Deaconess Hospital as of September 30, 1979 and September 24, 1978 and the related statements of revenues and expenses, changes in fund balances, and changes in financial position of unrestricted funds for the fiscal years (53 and 52 weeks, respectively) then ended. Our examinations were made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

As more fully described in Note 1 to the financial statements, it is the consistent practice of the Hospital to record certain unrestricted legacies received as credits directly to unrestricted fund balances. In our opinion, generally accepted accounting principles require that such legacies be reported as non-operating revenue.

In our opinion, the financial statements referred to above present fairly the financial position of the Hospital at September 30, 1979 and September 24, 1978 and, except for the effects of the accounting policy referred to in the preceding paragraph, the results of its operations, changes in its fund balances, and changes in the financial position of its unrestricted funds for the years then ended, in conformity with generally accepted accounting principles applied on a consistent basis.

Deloitte Haskins & Sells
Boston, Massachusetts
November 9, 1979

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